

REMARKS

Applicant has reviewed the Office Action mailed January 25, 2005 and appreciates that the Examiner has now added an additional references to his rejections, confirming Applicant's position that the two originally cited references do not on their own make obvious the present invention as now claimed. Clearly, in response to Applicant's previous amendments and arguments the previous rejections based on Hales and Larson are now no longer sufficient alone to make obvious the claims. The office action has added the teachings of Valley in order to reject the claims as obvious.

Applicant appreciates the Office Action's recognition of the filing of a Request for Continued Examination and that the application is eligible for continued examination.

The Examiner has rejected claims 1-18 under 35 U.S.C. Section 103(a) as being unpatentable over Hales (U.S. Patent No. 6,360,182) in view of Larson (U.S. Patent No. 6,066,129) and Valley (U.S. Patent No. 5,574,794).

Applicant, in previous Office Actions, has explained how neither Hales nor Larson nor the combination of both makes the present invention as presently amended obvious. Applicant will, therefore, discuss how the addition of Valley to the above combination does not make obvious the present invention and then recap below, its previous arguments with respect to the Hales and Larson patents and the combination of those references.

The Valley patent discloses a noise-canceling microphone that can be adapted to be "adhesively" attached to the exterior of a mask of a type useful only in a land based atmosphere. This is demonstrated in the patent where the mask is shown and described

for use on land and/or a one atmosphere absolute environment where pressure on the user is at 14.7 psi (nominal pressure at sea level). The mask is described in the reference as useful in nuclear material handling and/or firefighting situations -- both of which are done at surface level atmospheric pressure. The purpose of the Valley mask is keeping airborne fumes away from the respiratory system of the user; the microphone in Valley permits users to talk with each other to coordinate clean up or firefighting efforts. In sharp contrast in the present invention the mask is used underwater at great depth. The Valley disclosure describes a "generally conventional face mask," and it should be understood that a full-face underwater breathing mask is not, in anyway, conventional.

Further, the microphone is intended for audio communication and, based on the description in the patent, would probably not work underwater. This is believed to be the case because first, the two diaphragms of the microphone of the Valley disclosure create, according to the disclosure (col. 2, lines 17-24) an "airtight chamber" of "a fixed quantity". It will be understood that because that microphone creates sound by varying the internal pressure created therein, it can only work at ambient atmospheric pressures found on the surface of the earth. When for example, an object submerges in seawater to 33 feet -- the ambient pressure doubles, therefore introducing 2 atmospheres of pressure; at 66 feet of seawater the pressure is tripled -- and so on every 33 feet. Clearly, with this phenomena in mind, the airtight chamber of Valley would either implode, depending on the strength of its construction, or at a minimum, would compress, thereby altering the frequency response of the microphone or allow no vibration and therefore no sound.

It will also be understood that the frequency range of the human voice also changes under pressure. The combination of the change in the human voice with the alteration in the frequency response of the microphone, coupled with the high threshold of clarity needed to instruct a computer to operate would not lead the person of ordinary

skill in the art to the combination suggested by the Office Action to overcome all of the problems solved by the device of the present invention as presently claimed.

With respect to the Valley disclosure, the microphone of Valley is designed to be placed with an adhesive on an exterior surface of the Valley mask. Such a set up is perfectly acceptable in a dry environment such as on land or even with a slight amount of moisture, such as in a firefighting environment. However, an adhesively placed microphone on an exterior surface of a diving mask would soon fall off due to exposure to water. Valley, in fact, teaches away from placing a microphone anywhere except adhesively on the mask (see col. 1, lines 36-40). Valley teaches that placement of a microphone in a mask would lead to leakage around the mask. As such, one having ordinary skill in the art in would not look to the disclosure of Valley, which has nothing to do with diving, to arrive at an appropriate microphone for use in a deep water environment. Valley adds nothing to the teachings of Hales and Larson so as to make the present invention obvious. Valley teaches away from the present invention.

Further, to restate Applicant's arguments¹ with respect to the other cited references, the present invention concerns a combination underwater diving mask and diving equipment and computer system responsive to voice commands, such as a personal computer system. The combination, as stated in the specification, is not merely a dive computer, but is instead a fully functional computer for use underwater. The dive mask is further specifically designed such that the user can speak while underwater, something atypical of dive masks. With a mask that permits the wearer to speak while underwater, and the addition of a computer that can be run by spoken instructions, the user can operate a fully functional computer while underwater, which permits, among

¹ Please see Applicant's previous responses for a more complete explanation of the following points. Applicant's previous responses are incorporated herein by reference as if set forth here in their entirety.

other things, surveying, engineering operations and other tasks to be completed while diving.

There is no motivation to replace such a computer with a fully functional PC type computer, as explained below. Clearly, the dedicated "dive computer" of Hales cannot perform the functions of a general purpose computer, which the device of the present invention, as now claimed is designed to do.

With respect to Larsen, there is no teaching in Larsen that would supplement Hales to the point of making the present invention obvious. Larson teaches the use of a laser in medical situations. While Larson teaches the use of speech recognition and head-up display, the environment in which the device of Larson is used could not be more different than the environment for the use of the present invention. Specifically, Applicant can find no teaching in Larson showing a sealed speaking chamber. To the contrary, Larson (Fig. 9) shows an open mask and microphone. Figure 9 of Larson shows the shield device used by the user of the Larson device, and there is no indication that the mask is sealingly engaged to the face of the user, as there would be no need for such sealing in an operating room environment. The sealing of the surgeons face within a mask could in fact be contrary to good surgical procedure. Such a sealed environment would be uncomfortable to surgeon (whereas it is necessary to a diver) and could cause, due to exhaling of warm moist air into the sealed environment of the mask, the problem of fogging of the lens, such that the surgeon's vision is impaired.

In order to speak in an underwater environment the diver must have his mouth sealed apart from the water. The mask of Larson is open to the environment which would allow water into the user's mouth. Further, the user of a device made in accordance with the teachings of the Hales disclosure, would have a mask but would also have a breathing apparatus in his mouth. The user could not speak with such an

apparatus in his mouth. Clearly, in reviewing these references, there is no reason to seal the surgeons mask in an operating room; and there is no reason in Hales to provide a mask that covers the mouth of the diver as the more simple manner of diving is the manner shown in Hales (a separate mask and mouth breathing piece). As a result, there is no suggestion in Hales or Larson to combine these references to arrive at the device of the present invention.

Applicant again traverses the rejections of claims 2-3, 4-5, 9-14 and 15-18, discussed on pages 4 and 5 of the Office Action. Applicant submits that the Examiner has found no disclosure that would suggest the use of the various instruments, used in the present invention, in a dive/underwater situation. A "dive computer" of the type taught by Hales has served the needs of divers for a "dive-type computer." There is no suggestion or motivation in Hales to include a general personal computer in an underwater environment. Most divers do not want the added weight of a full computer nor need such functionality because the simple environmental data provided by a "dive computer" is sufficient.

With respect to Valley, its teachings do not add a speaking chamber for use in an underwater environment. Further, the microphone of Valley is incompatible in an underwater environment, both in its use (as a pressure sensitive device in a high pressure environment) and its ability to adhere to the outside of a mask (in an underwater, high pressure environment). The teaching of Valley is incompatible with the present invention.

Further prosecution of the present application and reconsideration and withdrawal of the rejections of the claims are respectfully requested. Applicant earnestly believes that the amendments made in response to the previous office action, which clearly show that the sealed chamber of the present invention is water-tight and that the device is

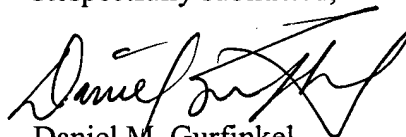
Applicant: Randall S. Estep
Application Serial No. 09/914,969
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designed for use in deep water under pressure, make the claims of the present invention distinguishable over the art cited. Accordingly, Applicant submits that the application as presently claimed is in allowable condition and respectfully requests allowance of the claims as presently amended.

Applicant encloses a petition for a one-month extension of time to respond, as well as a check to cover the fee for the petition. It is believed that no other fees or petitions are necessary in this reply and as a result of the amendments. However, should any fee be needed, please charge the following Deposit Account for any such fee, Deposit Account No. 23-0920, and deem this paper to be the required petition.

Applicant hereby respectfully requests the withdrawal of the rejections of the Office Action and continued prosecution, reconsideration and reexamination. A sincere effort has been made to overcome the Office Action's rejections and to place the application in allowable condition. Applicant invites the Examiner to call applicant's attorney to discuss any aspects of the invention that the Examiner may feel are not clear or which may require further discussion.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Daniel M. Gurfinkel", with a stylized flourish at the end.

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